Asian Journal of Multidisciplinary Studies
Volume 2, Issue 5, May 2014

ISSN: 2321-8819 (Online)
2348-7186 (Print)
Impact Factor: 0.923 (JIF)

Agropedia Transformation: Bridging Rural Bharat with Agricultural India

Leela Dhar Mangi

Assistant Librarian, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, J & K (India) and Research Scholar, Department of Library & Information Science, University of Jammu

Abstract: The national agricultural innovations project(NAIP) of Indian council of agricultural research(ICAR), New Delhi supported consortium project on the use of ICT's in developing a multimedia database of best management practices for few important crops and provides solutions to production problems faced by farmers across the country. The progress of research in agricultural fields and improvement of productions essentially requires timely supply of information to widely scattered users. To bridge this gap, Indian institute of technology, Kanpur (IIT-K) developed AGROPEDIA. Multimedia content in bilingual language on cotton, paddy, chickpea and pigeon pea has been uploaded to Agropedia-Indica portal. Agropedia forms the nucleus of possible collaborative global efforts in the field of agriculture.

Keywords: Agriculture Portals, agriculture knowledge management (AKM), Agropedia-Indica, ICT, etc.

1. Introduction:

India is predominantly an agricultural country. Agriculture contributed about 45% of GDP and 50% of export. Management of Agriculture sector, however, is complicated by several staggering problems traceable to vastness of the country, excessive diversification of agricultural products, highly centralized land holdings and considerably varying geology and hydrology over the land mass. It is true that agriculture is an applied science (as envisaged by Melvil Dewey in his DDC) but it has interconnection with pure sciences its scope is vast and boundary lines are not clearly marked; its ramifications runs in to almost all physical and biological sciences.

The agricultural information has many aspects, many levels and has many peculiarities. The information is needed on the farmer's field and must reach there, and the information must be in such a package that it can be utilized at once.

Agriculture in developing countries like India is often an information poor sector of the economy. The generation and use of relevant, timely and accurate information in this sector is quite complex and challenging. The products emanating from remote sensing are nothing but information with certain levels of quality, coverage and timeliness. Information has economic and social values only if it is used to have a decision and also act on this. Better quality of information viz., more accurate, more timely and easier to use adds value; enhances return and contribute in terms of more efficient usage of resources leading to higher productivity gains.

India is one of the biggest and strongest agro based nation in the world. Inspite of an alarming increase in the population, it has managed to attain self sufficiency in agriculture, thanks to green revolution and sustainable agriculture. However, looking into the total area under cultivation, achievements made in agricultural productivity are far below the desired level.

One of the major constrains facing Indian agriculture is the deficiency in transfer of relevant knowledge from national agricultural research system (NARS) and state government agricultural departments to the small and marginal farmers who forms bulk of nation's agricultural population. Hence, farmers are deprived of timely availability of latest technology and support leading to considerable economic loss, distress and suicides in extreme cases. Further, there exists a huge gap between farmers and agricultural scientists and extension agencies involved in technology development and transfer activities. Under such circumstances, innovative ICTs can play a major role in bridging this gap.

AKM helps in creating knowledge repositories, improving knowledge access, sharing and transfer, enhancing the knowledge environment in the rural communities. ICTs can make AKM more effective by providing agro information services that are affordable, relevant (timely and customized), searchable and up-to-date.

ICTs is an umbrella term that includes computer hardware and software, digital broadcasting and communication technologies, digital information repositories (Selwyn, 2002, pp. 330-967) and internet , television, radio, mobile phones and the policies and laws that govern the use of these devices and media. The intrinsic and instrumental importance of ICTs in AKM is such as tom makes

it a significant factor in the future competitiveness of agriculture in the global economy (Warren, 2002, p.1-8)

The role of ICT's to enhance food security and agricultural livelihood is widely recognized and discussed world over (Lac, et. al., 2007).

Strong ICT sector in India, with rural broadband connectivity in the offing provide a great opportunity for developing effective AKM systems. However, at present the universal agricultural extensions and farmer outreach programs in India face major challenges such as quick and timely outreach, solutions tailored to needs of individual farmers and cost effective outreach. Keeping these factors and needs of Indian farmers in mind, a project redesigning the farmer-extension- agricultural research/ education continuum in India with ICT mediated knowledge management was implemented under the aegis of the World Bank funded NAIP of ICAR new Delhi. The intent was to develop highly integrated knowledge management approaches between agricultural research, education and extension services.

The NAIP is an approach to Knowledge management involves the development of highly int4egrated approaches between agricultural research and education sectors and ICT sector. IIT-K, Uttar Pradesh is one of the significant partner of the universities of the agricultural science (UAS), Dharwar and Raichur, Karnataka in the national pilot project. UAS executed recently one project entitled digitization of agricultural information for knowledge management system, its delivery and impact assessment. The role includes the following:

Providing logistic supports in developing information structure for semantic/ontological search engines, to develop knowledge interface between farmers and information resources available in state agricultural universities(SAU) libraries by strengthening and modernization of the selected Krishi Vigyan Kendriyas (KVK's)/ agricultural research system(ARS), delivery of the develop knowledge resources/tools through KVK's/ARS and assessment of the impact of knowledge management resources/tools on the functioning and effectiveness of KVK's/ARS.

2. Material and Methods

In this consortium project, IIT-Kanpur has individually developed knowledge organization systems in Agricultur-Agropedia. The role of UAS, Dharwar and Raichur was to provide agricultural information content and incorporation into the knowledge organization systems and KVK's/extension education units (EEU's) for the delivery of developed knowledge resource/tools i.e. Agropedia.

3. Agropedia: Bridging Rural Bharat with agricultural India by Transformation

IIT-Kanpur develop a portal called Agropedia (www.agropedia.in) with an objectives to create a repository of agricultural knowledge containing universal knowledge models and multi-lingual crop content with appropriate interfaces. These universal knowledge model help in mapping the knowledge and tagging content of this site so that the information is semantically searchable. Initially both text and multimedia contents on crops such as Paddy, Wheat, Chickpea, Green peas, Pigeon pea, Sorghum, Groundnuts, Litchi and Sugarcane were added to the portal with the help of consortium partners. As per the mandates of UAS, Dharwar and Raichpur region specific bi-lingual multimedia (text, images, graphics, Audio and video) content on rice, cotton, pigeon pea and chick pea was develop and added to the portal. On review it is found that the portal also includes crop calendar and Do's and don'ts on selected crops. Expert from UAS utilized the interaction pace such as Agrowiki and Agroblog available in Agropedia for adding content and also for commenting on the existing content.

Agropedia platforms (http//agropedia.iitk.ac.in/) consists of acknowledge repository, a social networking platforms and content distribution services. Knowledge repository consists of universal Meta models and localized content develop for open learning and sharing of information related to agricultural. It is the first Indian agricultural knowledge repository developed with knowledge – models for localized content for a variety of users with appropriate interfaces built in collaborative mode to support information access in multiple languages.

Agropedia is best described as one stop shop for all information, pedagogic or practical knowledge related to extension services in Indian agriculture. It is sponsored by NAIP of ICAR with the following objectives:

a) To build a digital ecosystem in agricultural domain for proper knowledge circulation;
b) To develop an agricultural repository;
c) To prepare a bridge between explicit knowledge holders (like agricultural scientists, researchers, experts and tacit knowledge holders like farmers and other field workers, etc.
d) To deploy extension services for agricultural development.

By employing state-of-the-art practices and techniques of the semantic web, Agropedia enables specialists in the agriculture research, education domain and other, interested in agriculture can made contributions to the knowledge base. The users have a choice to contribute towards the

certified contents (gyan dhara) or participate in the interaction space to contribute to emergent knowledge (jangyan). Thus, the users of Agropedia are the architects of the knowledge, which is lifeblood of Agropedia and they do so through an easy to use and attractive web interface.

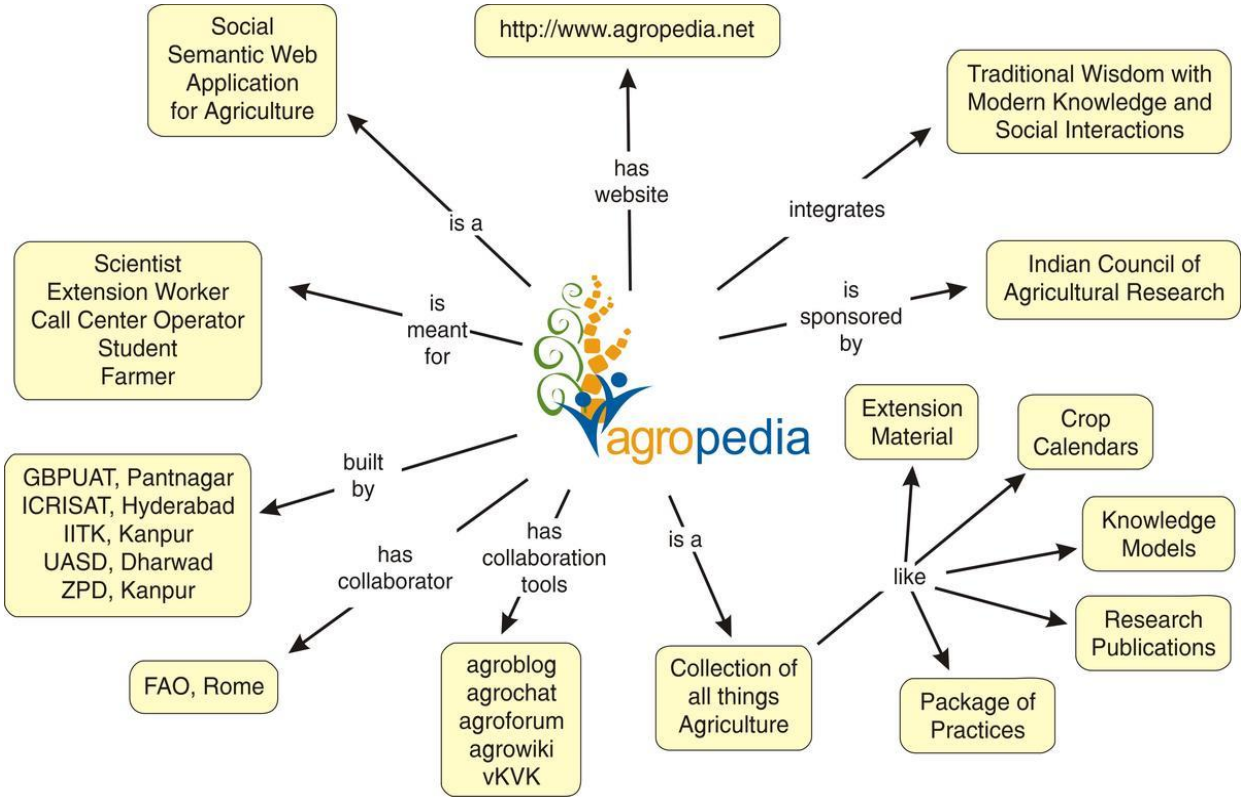

Figure 1 (3.1)

4. Krishi Vigyan Knowledge – Network (KVK-Net) http://agropedialabs.iitk.ac.in/extension/)

KVK-Net is an agricultural knowledge sharing platform meant for experts at KVKs for sharing information and experiences. It consists of interaction tools like blog, discussion boards, event, community, chat and private message systems. It has seven agriculture and allied communities to facilitate and share knowledge among the agricultural experts and extension functionaries. Pilot testing is underway in a few KVKs of zone IV of Utter Pradesh. It is proposed to cover all KVKs of the country in near future.

5. Openagri

Openagri allows for uploading research publications such as journal Articles, conference papers, books, book chapter, proceedings, preprints and multimedia contents, etc. For each document being uploaded in to this repository, a set of appropriate keywords are assigned automatically from agrotags.

6. Agro-advisory delivery networks: VKVK (http://agropedialabs.iitj.ac.in/kvk/)

Agropedia has several mechanisms for delivering the content to various stakeholders. VKVK (Virtual Krishi Vigyan Kendras), a simple messaging system based platform allows, agro-advisories to be sent to the farmers' cell phone using SMSs (Short message Services). VKVK is a platform that connects KVKs with farmers through internet and mobile technology. Finally a phone based delivering system allows an agricultural expert to transmit a voice based alert / advisory to be transmitted to farmers using a phone call. A recorded message can be transmitted via vKVK platform to all farmers under the guidance of KVK experts. This platform has been successfully tested in selected districts of Utter Pradesh, Uttrakhand and Karnataka.

7. Crop Knowledge Model

The content in Agropedia is aggregated and organized by the use of knowledge models. Knowledge models are virtual representations of important concepts in agriculture with appropriate relationship between them. This is an attractive,

interactive and efficient way of information dissemination to the users. The semantic technology used in Agropedia is implemented by developing knowledge models which form the basis for cataloguing of agricultural information. Knowledge Models, developed by domain experts or professionals who are acknowledged experts in their specific agricultural domain, linked different concepts in agriculture through robust relationships.

These models enable Agropedia to produce a better multi-lingual agricultural information search and display results. Agropedia content is organized in a systematic format using semantic web technologies and using knowledge models. Fifteen crop knowledge models have been developed using C-map software and made available on Agropedia. These crop knowledge models include:

a) Rice;
b) Wheat;
c) Chickpea;
d) Pigeon pea;
e) Vegetable pea;
f) Sorghum;
g) Groundnut;
h) Sugarcane;
i) Litchi;
j) Safflower;
k) Banana;
l) Chilli;
m) Mango;
n) Grapes; and
o) Potato & tomato

These knowledge models enabled Agropedia to produce a robust multilingual (Hindi, Kannada, English) search facility for retrieving agricultural information reposted in different digital formats like word documents, FAQs, images and videos which come with appropriate live tags attached, making them easily visible, locatable and searchable.

8. Social Networking

The Agropedia platform aims to foster social networking and provides space for interaction to motivate and enable a healthy exchange of ideas among interested group of people. The objectives of social networking platform are to capture tacit knowledge as well as to vet existing encyclopedic content, and to provide mechanism to link agricultural professionals with in India and at global level and provide a mean for sharing problems and solutions instantly.

The efficiency of Agropedia portal can be improved through creating awareness in the scientists, officers of the government development departments and farming community with the help of extension agencies such as KVKs, EEUs, NGOs and progressive farmers through social networking. Organization of workshop / training is one essential area, without which these agencies could be really ineffective. The ICAR has invited scientists of all State Agricultural Universities (SAUs) and ICAR institutes to contribute for the development of Agropedia to make them much more useful and effective.

9. Results and discussions

There are more than eighty agricultural websites developed by private, public and cooperative sectors in India. Agropedia is a portal developed by IIT, Kanpur. It is an open access portal wherein scientists, students, extension workers, farmers, traders and businessman can interact with each other. Using state-of-the-art practices and techniques of semantic web, domain experts can make lasting contributions to the vast knowledge base of Agropedia (Sarkar, et.al., 20124, p.1-2). UAS Dharwad/Raichur were involved in contributing content to the certified contents (gyan dhara) and emergent knowledge (janagyan) components of Agropedia. The bilingual crop content in the form of text, graphs, images, and videos on paddy, cotton, pigeon pea and chickpea were added to certified contents.

The semantic technology in Agropedia was implemented using ‘knowledge models’ which formed the basis of cataloguing. Knowledge Models formulated by domain experts assist in developing links among different concepts in agriculture through simple relationships. These Models enabled Agropedia transformation for bridging rural bharat to Indian Agriculture for producing better search results set as all the documents, images and video come with appropriate live tags attached which make them visible and searchable.

10. Conclusion

ICT platforms Agropedia has proved to be very effective and useful tool for efficient transfer of agricultural technology in Agricultural Knowledge management (AKM) in India (India. Ministry of Information and Broadcasting, 2011, p.65-66). Within a short span of time i.e. less than five years of its inception, Agropedia has the distinction of being visited by people from over 140 countries and got 5,00,000 page views till date. Today it boasts of over 6000 registered users, with over 1500 documents like information objects among certified content, and almost the same number (blogs, wiki pages etc.) of documents from voluntary users. Openagri which was launched much later has about 1000 documents. However, Agropedia’s transformation is essential in collaborative era for bridging rural bharat with Indian agriculture be it through participation of SAUs, ICAR institutes or other relevant organizations.

Acknowledgements

The authors gratefully acknowledge the support from Dr. T V Prabhakar, IIT Kanpur (email: tvp@iitk.ac.in) and Dr. T V T Yaduraju, ICRISAT, Hyderabad (email: n.yaduraju@cgiar.org) for completion of this paper.

References

India. Ministry of Information and Broadcasting (2011). A reference annual. New Delhi, Publication Division. pp. 65-66.

Lac, S., Wiefse, B. and Frans, N. (2007). How ICT can make a difference in agricultural livelihoods? International Institute for communication and Development (IICD).

Sarkar, R., Prabhakar, T.V. and Bhatia, M. B. (2012). Agropedia Revolutionizing Indian Agriculture. pp. 1-2.

Selwyn, N. (2002). Defining the Digital Divide: developing a theoretical understanding of inequalities in the information age. Cardiff University School of Social Sciences occasional. vol. 49, pp. 330-967.

Warren, M. F. (2002). Adoption of ICT in agricultural management in the United Kingdom: the intra-rural digital divide. Agricultural Economics, vol. 48 (1).pp.1-8.

http://www.icar.org.in/files/guidelines-of-ICAR.pdf retrieved on 10th April. 2014.

http://agropedia.iitk.ac.in/sites/default/files/Graphic1.JPG retrieved on 16th April. 2013